Patent Claims

Colonia 5

1. Mold-closing unit for an injection molding machine for processing plastics materials and other plasticizable masses, having

_

- a stationary mold carrier (10),

10

- a moveable mold carrier (11) which has between itself and the stationary mold carrier (10) a mold tentering space (R) to accommodate injection molds (M) of variable height, measured in a closing direction (s-s),

- a drive (D) to move the moveable mold carrier (11) in the closing direction (s-s) towards the stationary mold carrier (10) and away from the stationary mold carrier, which drive has at least two parts operationally connected to one another, of which one part is supported on a support element (21), and the other part is connected to the moveable mold carrier (11),

15

- guide elements (12) which guide the moveable mold carrier (11) during its movement in the closing direction (s-s), having at least one portion (12a, 26a)

20

١.

rJ

- a device for variably fixing the spacing (a) between the stationary mold carrier (10) and the moveable mold carrier (11) measured with the injection mold (M) closed and assuming a movement path of the moveable mold carrier unaltered in relation to a state before alteration of the spacing (a), which device enters operational connection with the portion (12a, 26a) of the guide elements (12) to fix the spacing (a) set,

25

- a fixing device (14) allocated to the moveable mold carrier (11) which, on actuation, fixes the moveable mold carrier (11) in its respective position,

30

- wherein drive (D), when the fixing device (14) is actuated and the device for variably fixing the spacing (a) is out of operational connection, itself alters the spacing (a) by displacing the device for variably fixing the spacing (a) along portion (12a, 26a),

35

10

15

characterized in that one of the two parts of the drive (D) extends as a linear movement means for the moveable mold carrier (11) in a linear manner in the closing direction even during the closing movement.

- 5 2. Mold-closing unit according to claim 1, **characterized in that** the drive (D) adjustably alters its own opening stroke when the spacing (a) is altered.
 - 3. Mold-closing unit according to claim 1, **characterized in that** the drive (D) is a hydraulic drive and that the parts of the drive (D) are the cylinder (25) and piston rod (26) of a hydraulic piston-cylinder unit.
 - 4. Mold-closing unit according to claim 1, **characterized in that** the drive (D) is an electromechanical drive and that the parts of the drive (D) include a rotational element and a linear movement means in operational connection therewith.
 - 5. Mold-closing unit according to claim 1, **characterized in that**, in connection with the drive (D), the spacing (a) is variable by alternate actuation of the device for variably fixing the spacing (a) and of the fixing device (14).
- 20 6. Mold-closing unit according to claim 1, **characterized in that** the unit for variably fixing the spacing (a) is a clamping device (13) and that this device for fixing the set spacing (a) enters positive operational connection with portion (12a, 26a) of the guide elements (12).
- 7. Mold-closing unit according to claim 6, **characterized in that** the clamping device (13) has a first collet chuck (37) which is disposed coaxially to the guide element (12) in the region of portion (12a) and can be transferred with portion (12a) into positive operational connection free from play.
- 30 8. Mold-closing unit according to claim 7, **characterized in that** the first collet-chuck-(38)-has-a-conical-region-(16a)-which, in-order-to-release the-tension, comes hydraulically into operational connection with a cone ring (31) connected to an annular piston (17) and under the force of resilient means (22), the annular

5

10

15

30

piston (17) being axially moveable to a limited extent along the guide element (12).

- 9. Mold-closing unit according to claim 6, **characterized in that** portion (12a) of the guide elements (12) has a thread (12b) to form a positive operational connection with a threaded bush (16) of the clamping device (13).
 - 10. Mold-closing unit according to claim 6, **characterized in that** the clamping device (13), to form a positive operational connection with portion (12a, 26a) has at least one nut which is operationally connected to a thread (12b) of said portion.
 - 11. Mold-closing unit according to claim 1, **characterized in that** the actuated fixing device (14) fixes the moveable mold carrier (11) in a non-positive manner to the guide elements (12).
 - 12. Mold-closing unit according to claim 11, **characterized in that** the fixing device (14) has a second collet chuck (19) which is disposed coaxially to a guide element (12) and is fixed on the moveable mold carrier (11).
- 20 13. Mold-closing unit according to claim 12, **characterized in that** the second collet chuck (19) has a conical region (19a) and in that a second hydraulically actuated annular piston (18) with a conical portion (18a) effects the clamping with the conical region (19a) when hydraulic pressure is applied, the additional annular piston (18) being preferably able to be reset via an additional resilient element 25 (20).
 - 14. Mold-closing unit according to claim 3, **characterized in that** the guide element is a piston rod (26) of the drive, which rod comes into operational connection with the clamping device (13) via a portion (26a).
 - 15. Mold-closing unit according to claim 1, **characterized in that** that there is hinged to the stationary mold carrier (10) a force transmission element (40), at the opposite end (42) of which, associated with the moveable mold carrier (11), is disposed the clamping device (13) which co-operates with portion (26a).

RABE 7